

AMENDMENTS TO THE CLAIMS

Claim 1 (Previously amended):

A self-sustained pulsating laser diode having a double-heterostructure comprising:

a first cladding layer of a first conductivity type;

a multi-quantum well active layer; and

a second cladding layer of a second conductivity type, both the first cladding layer and the second cladding layer being arranged on a semiconductor substrate of the first conductivity type, the number of said quantum wells being at least 5 and no greater than 10; and a layer thickness of a flat part of said second cladding layer having a current blocking structure being at least 300nm and no greater than 500nm; and a carrier density in said flat part of said second cladding layer having a current blocking structure being at least $1 \times 10^{17} \text{cm}^{-3}$ and no greater than $5 \times 10^{17} \text{cm}^{-3}$.

Claim 2 (Currently amended): A self-sustained pulsating laser diode having a double-heterostructure comprising:

a first cladding layer of a first conductivity type;

a multi-quantum well active layer of at least five well layers; and

a second cladding layer of a second conductivity type, both the first cladding layer and the second cladding layer being arranged on a semiconductor substrate of the first conductivity type, a layer thickness of a flat part of said second cladding layer having a current blocking structure being at least 300nm,

an effective refractive index difference parallel to the layers (Δn), said index resulting from said at least five well layers and said layer thickness of at least 300 nm, being at least 7×10^{-4} and no greater than 3×10^{-3} , and

a carrier density in a flat part of said second cladding layer having a current blocking structure being at least $1 \times 10^{17} \text{ cm}^{-3}$ and no greater than $5 \times 10^{17} \text{ cm}^{-3}$.

Claim 3 (Previously amended): A self-sustained pulsating laser diode according to claim 1, wherein said cladding layers are made of a semiconductor that includes AlGaInP, and said active layer is a semiconductor that includes at least one of GaInP and AlGaInP.

Claim 4 (Previously amended): A self-sustained pulsating laser diode according to claim 2, wherein said cladding layers are made of a semiconductor that includes AlGaInP, and said active layer is a semiconductor that includes at least one of GaInP and AlGaInP.

Claim 5 (Original): A self—sustained pulsating laser diode according to claim 1, wherein the (001) plane of said semiconductor substrate is misoriented by 5 degrees or more toward the [110] direction, and wherein said multi-quantum well active layer consists of compressively strained quantum wells.

Claim 6 (Original): A self—sustained pulsating laser diode according to claim 2, wherein the (001) plane of said semiconductor substrate is misoriented by 5 degrees or more toward the [110] direction, and wherein said multi-quantum well active layer consists of compressively strained quantum wells.

Claim 7 (Original): A self—sustained pulsating laser diode according to claim 3, wherein the (001) plane of said semiconductor substrate is misoriented by 5 degrees or more toward the [110] direction, and wherein said multi-quantum well active layer consists of compressively strained quantum wells.

Claim 8 (Original): A self-sustained pulsating laser diode according to claim 4, wherein the (001) plane of said semiconductor substrate is misoriented by 5 degrees or more toward the [110] direction, and wherein said multi—quantum well active layer consists of compressively strained quantum wells.

Claim 9 (Previously cancelled)

Claim 10 (Previously cancelled)

Claim 11 (Previously amended): A self-sustained pulsating laser diode according to claim 1, wherein said carrier density in said flat part of said second cladding layer having a current blocking structure is less than $3 \times 10^{17} \text{ cm}^{-3}$.

Claim 12 (Previously amended): A self-sustained pulsating laser diode according to claim 2, wherein said carrier density in said flat part of said second cladding layer having a current blocking structure is less than $3 \times 10^{17} \text{ cm}^{-3}$.

Claim 13 (Previously cancelled)